

Huntington's Disease – 2008

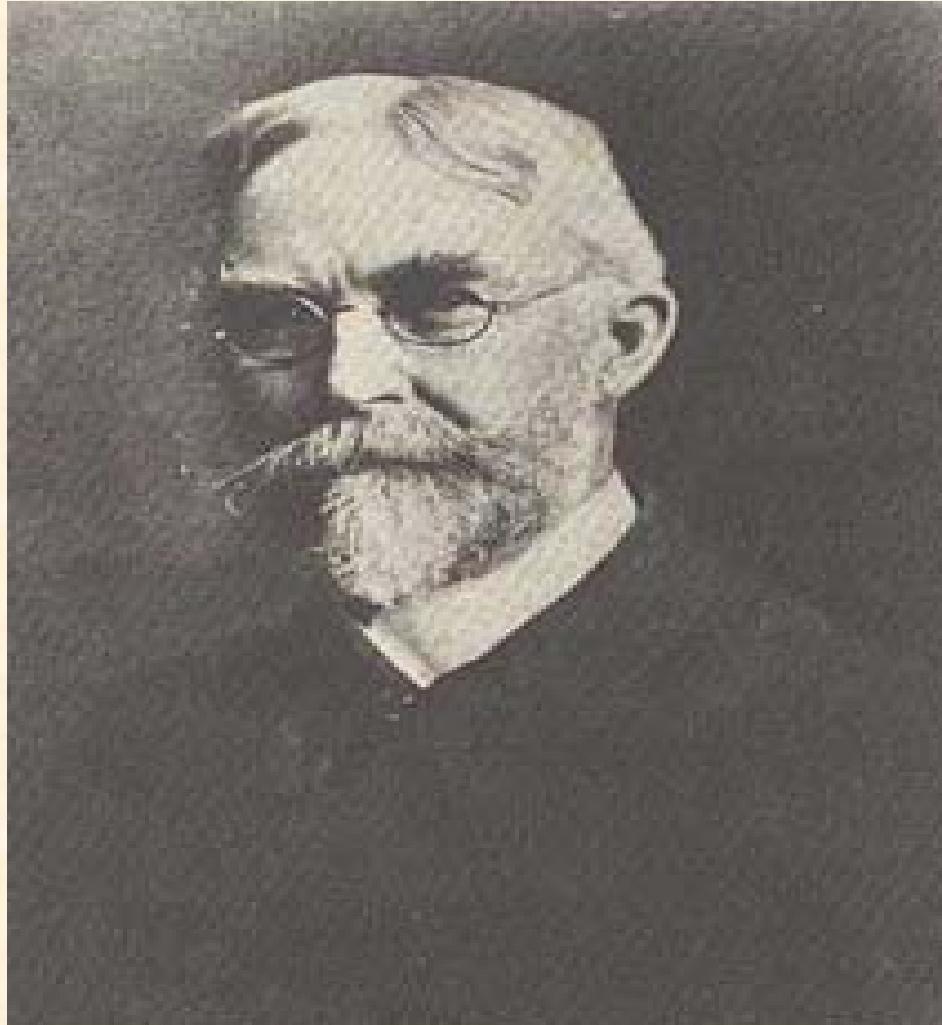
The Genetics of HD

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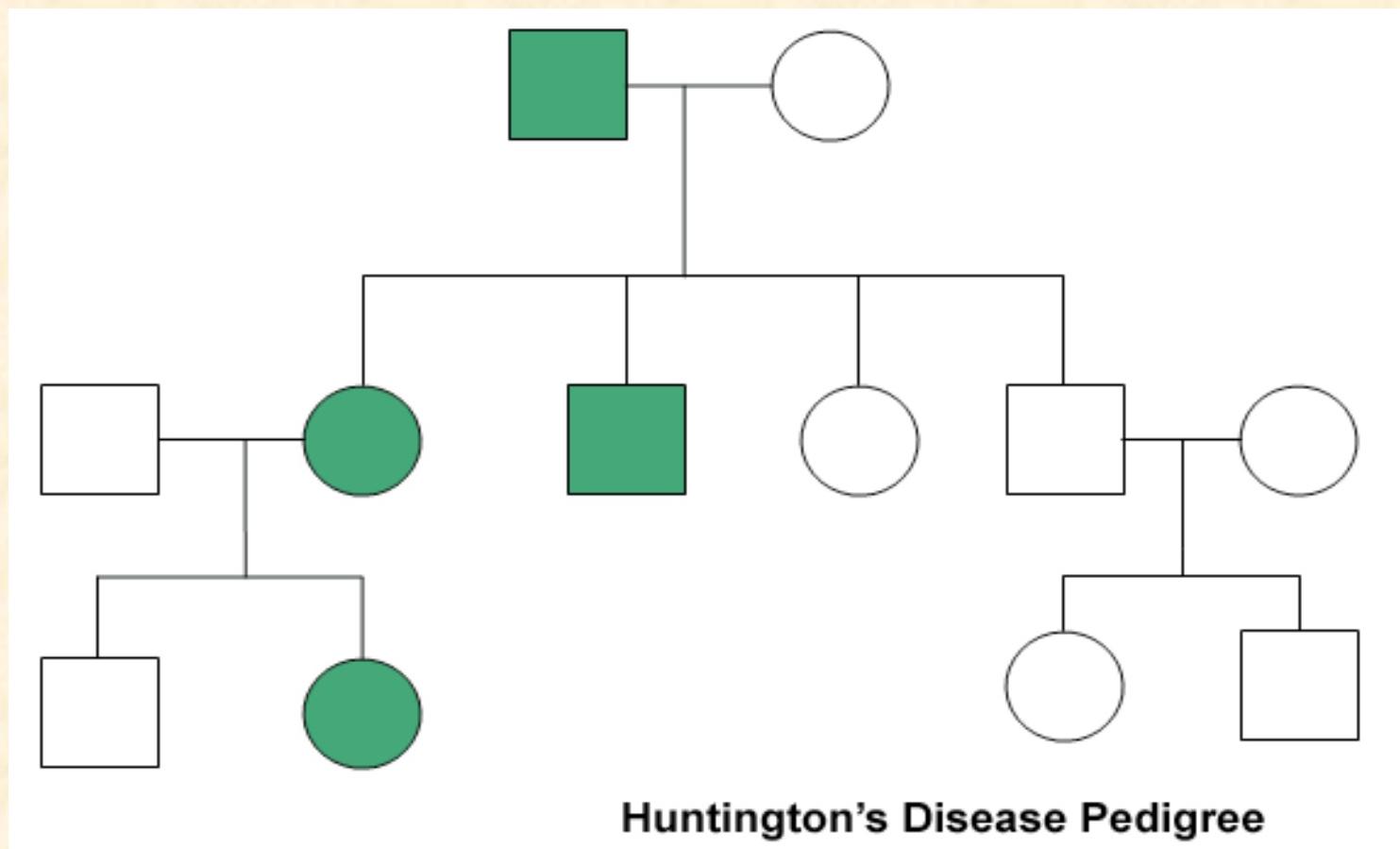
Disclosures

- Dr Moore has nothing to disclose**



George Huntington - 1911

Huntington's Observation



Affected

Huntington observed that there were families in his practice that had an inherited disorder characterized by involuntary movements (chorea)

Huntington's Disease

George Huntington

"On Chorea"

Medical and Surgical Reporter

Philadelphia

1872: 26, 317-321

**Essay read before the Meigs and Mason Academy
of Medicine at Middleport, Ohio, February 15,
1872**

Kussmaul, A and Nothnagel CHW (1872)

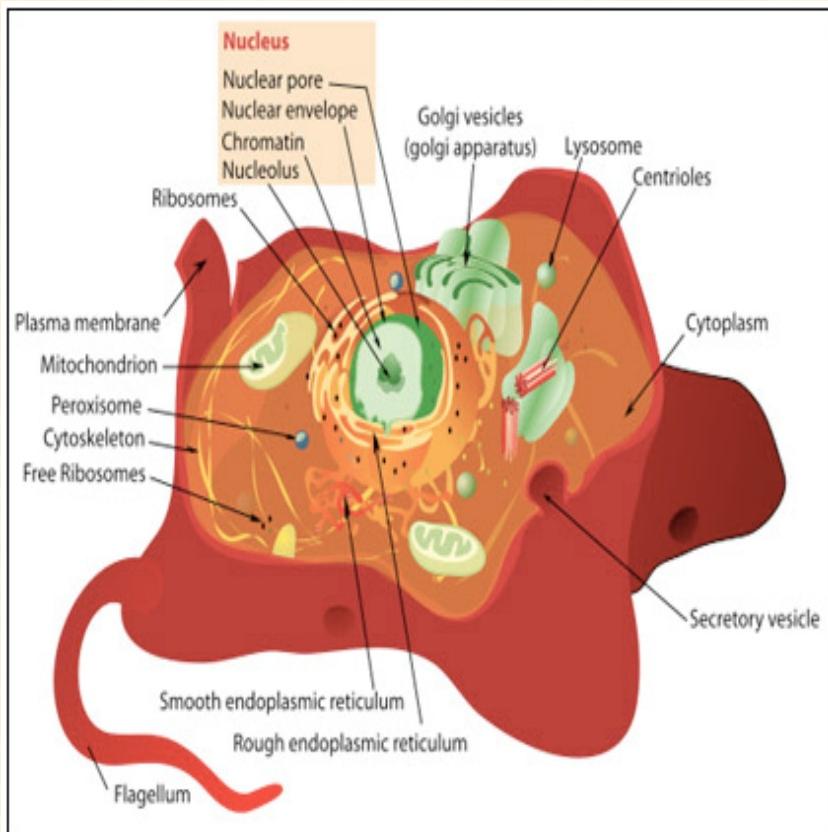
In Virchow-Hirsch Jahrbuch fur 1872, Berlin, p.175.

Annotation of Huntington's paper

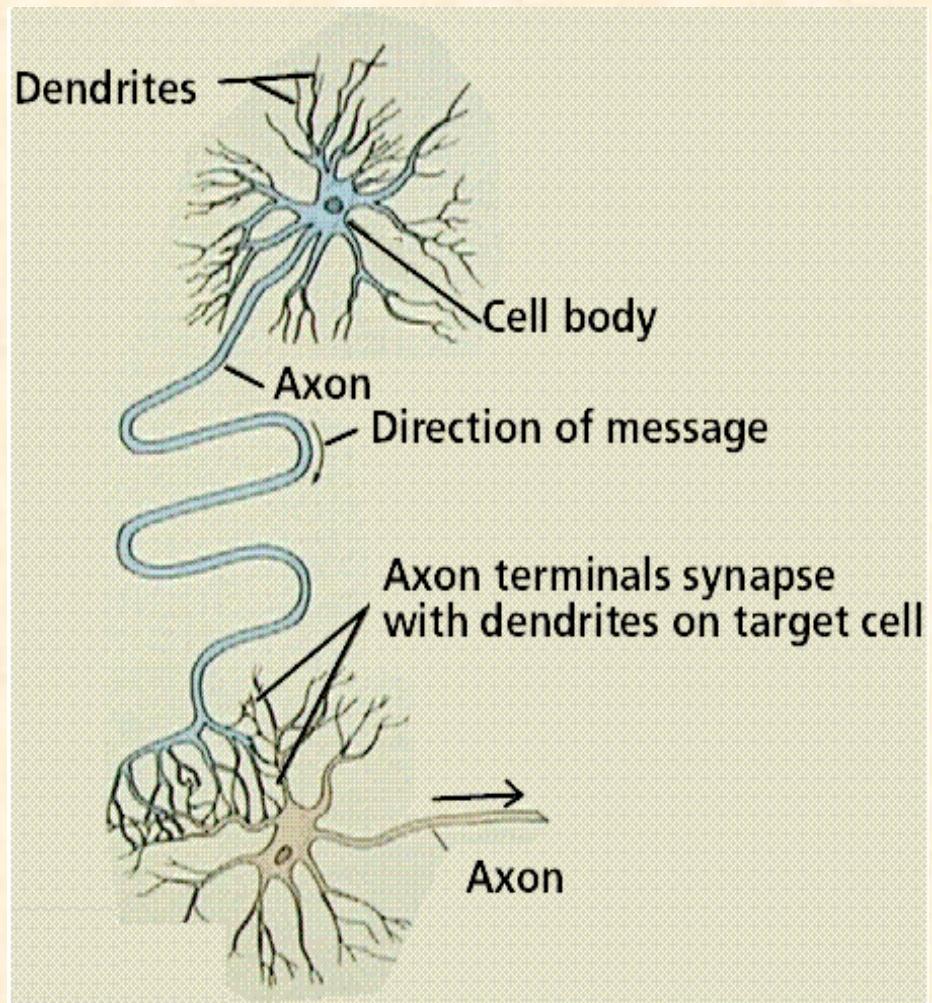
Noted by JM Charcot, Paris

Some Introductory Biology

A Note on Cells

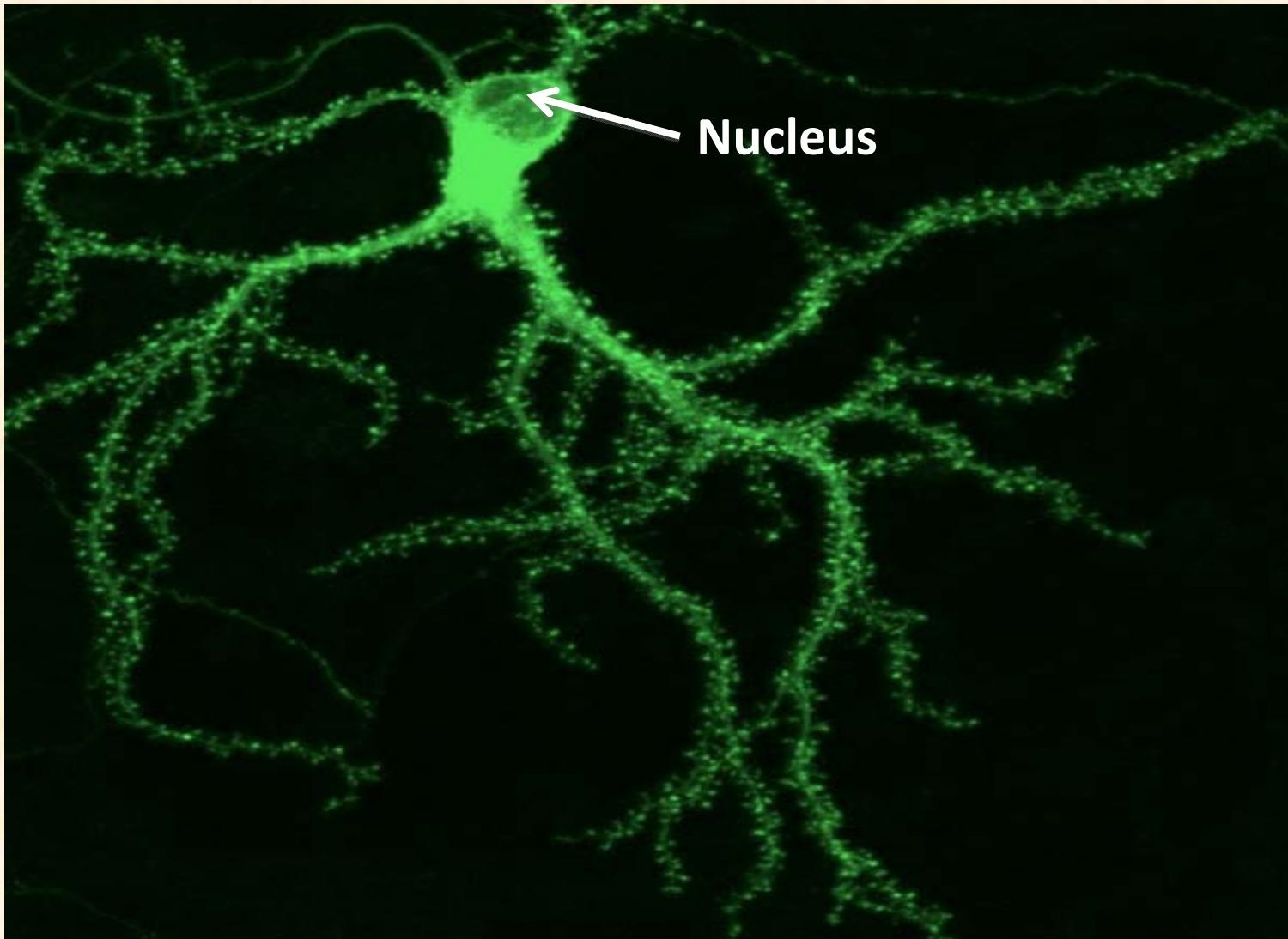


Generic Cell



Nerve Cell

HD – A Genetic Disorder Affecting Nerve Cells

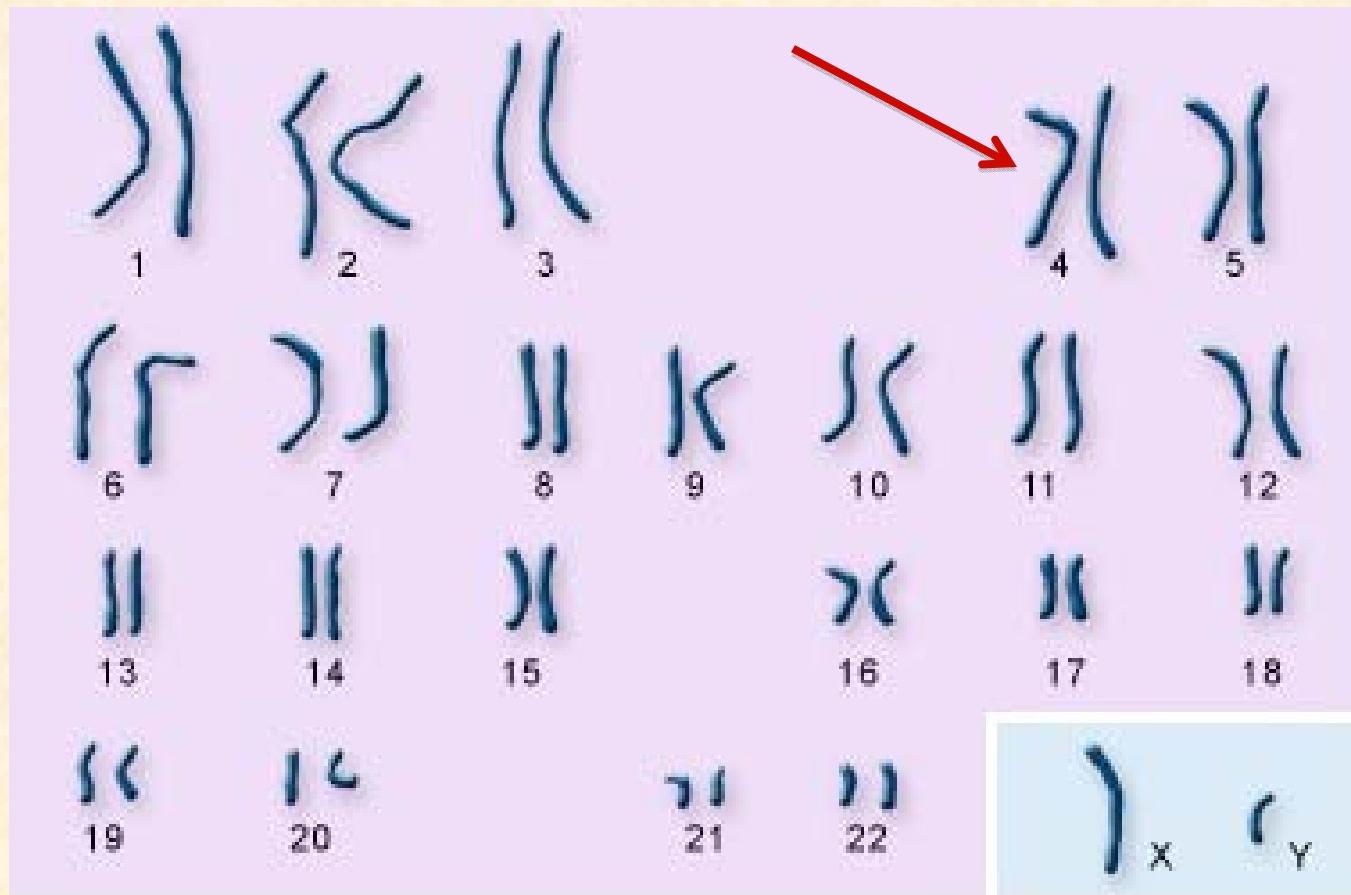


Nerve Cell - Brain

Genetics of HD

- **Terminology**
- DNA - deoxyribonucleic acid, a self-replicating material present in nearly all living organisms as the main constituent of chromosomes. It is the carrier of genetic information.

Genetic Material (DNA) Is Located in the Nucleus in Chromosomes

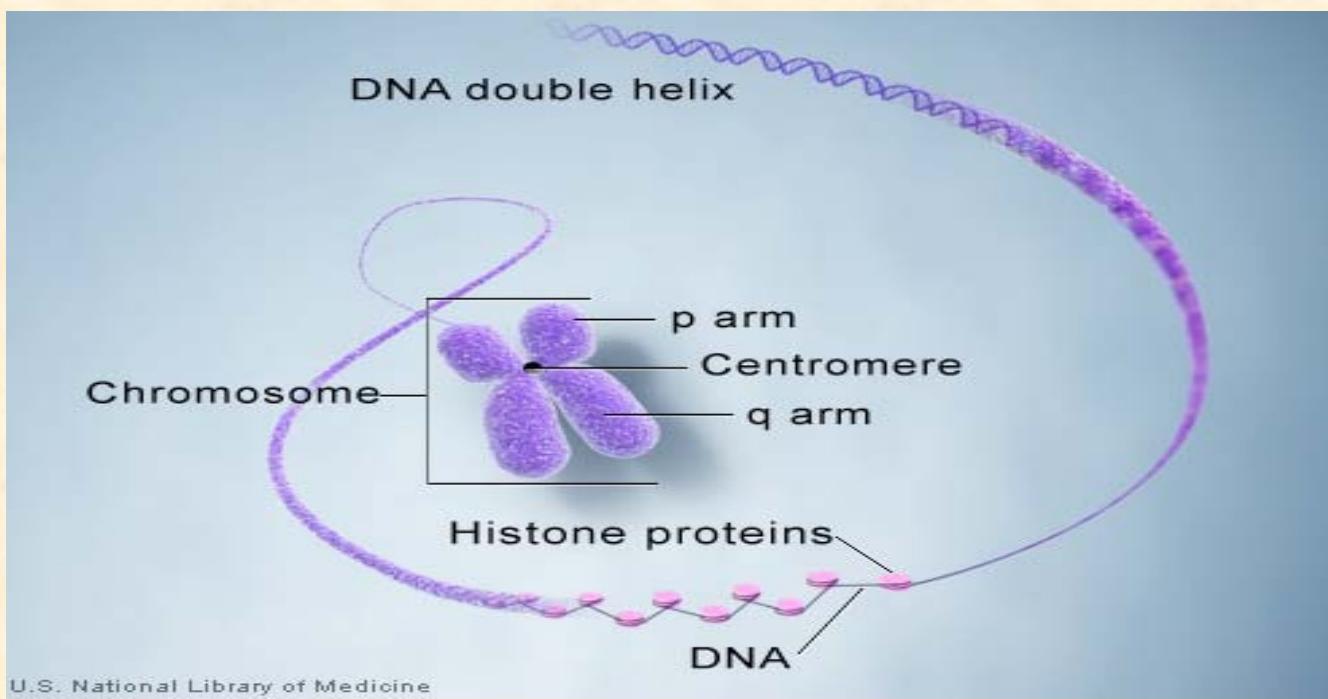
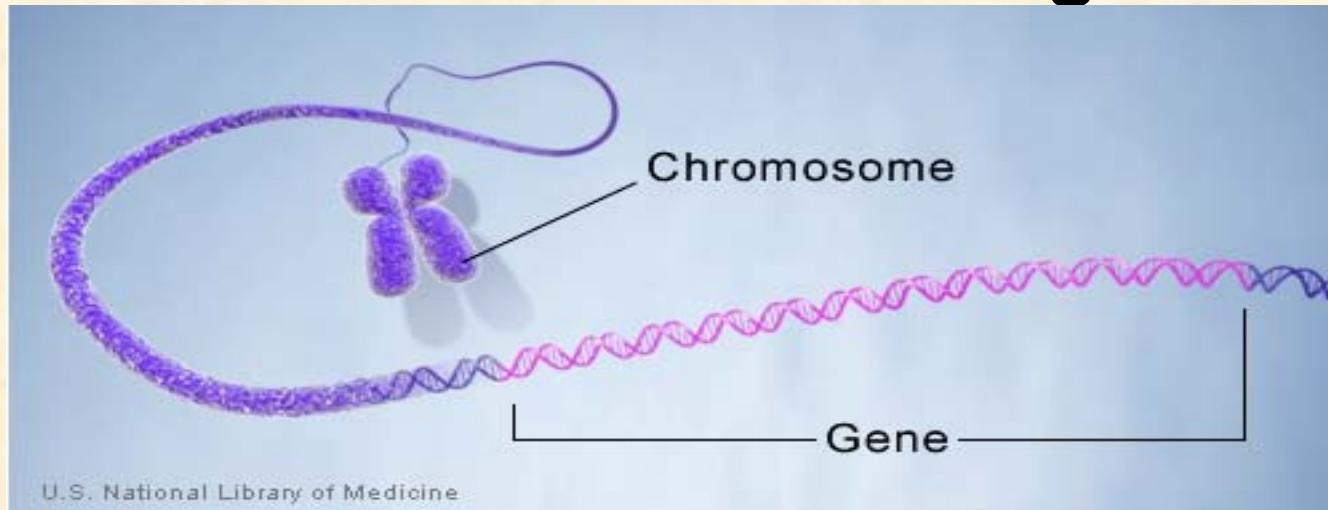


Chromosomes

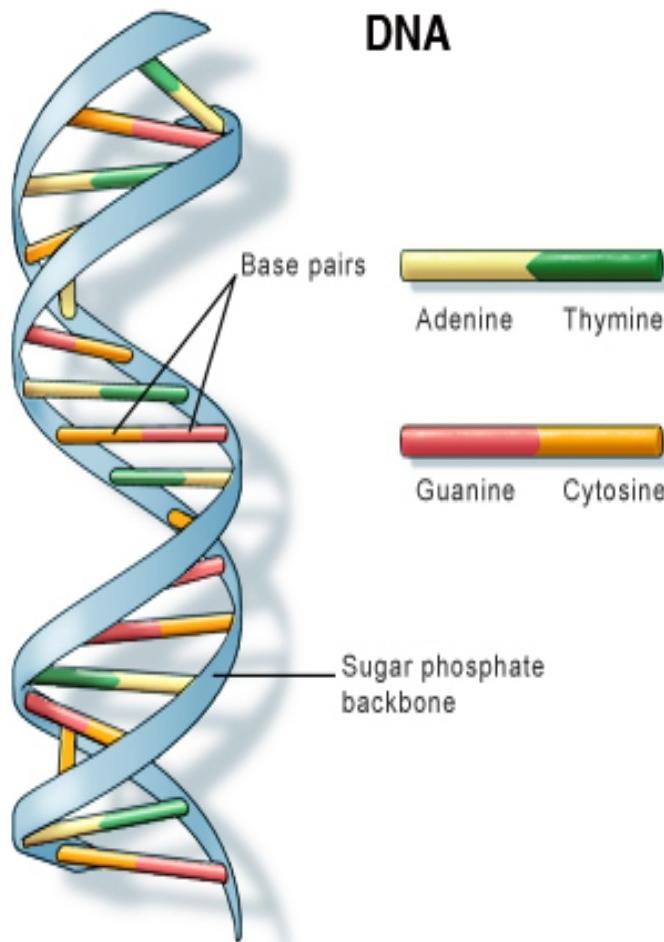
22 Autosomes

2 Sex chromosomes, x and y

Chromosomes Contain Strings of DNA



Genes Are Made From DNA



U.S. National Library of Medicine

DNA is made up of four nucleic acids

Adenine - A

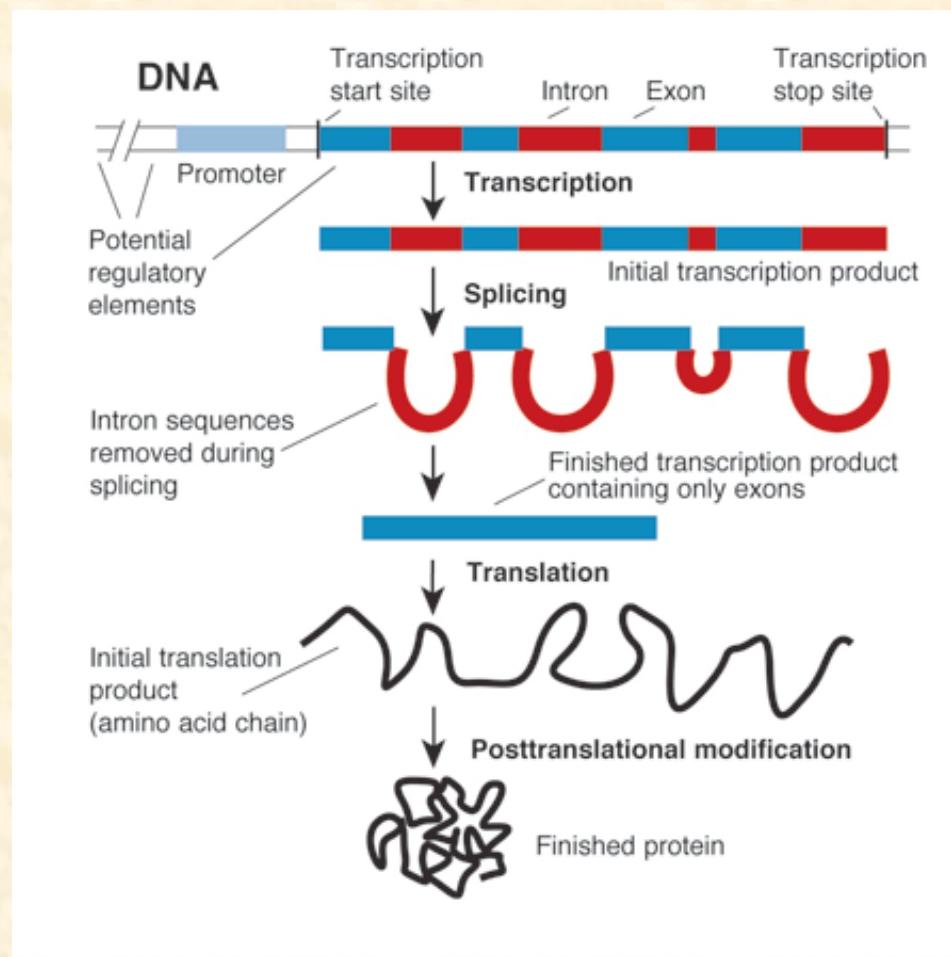
Cytosine - C

Guanine – G

Thymine – T

**Three consecutive in a gene code for an amino acid
E.g., CAG--Glutamine**

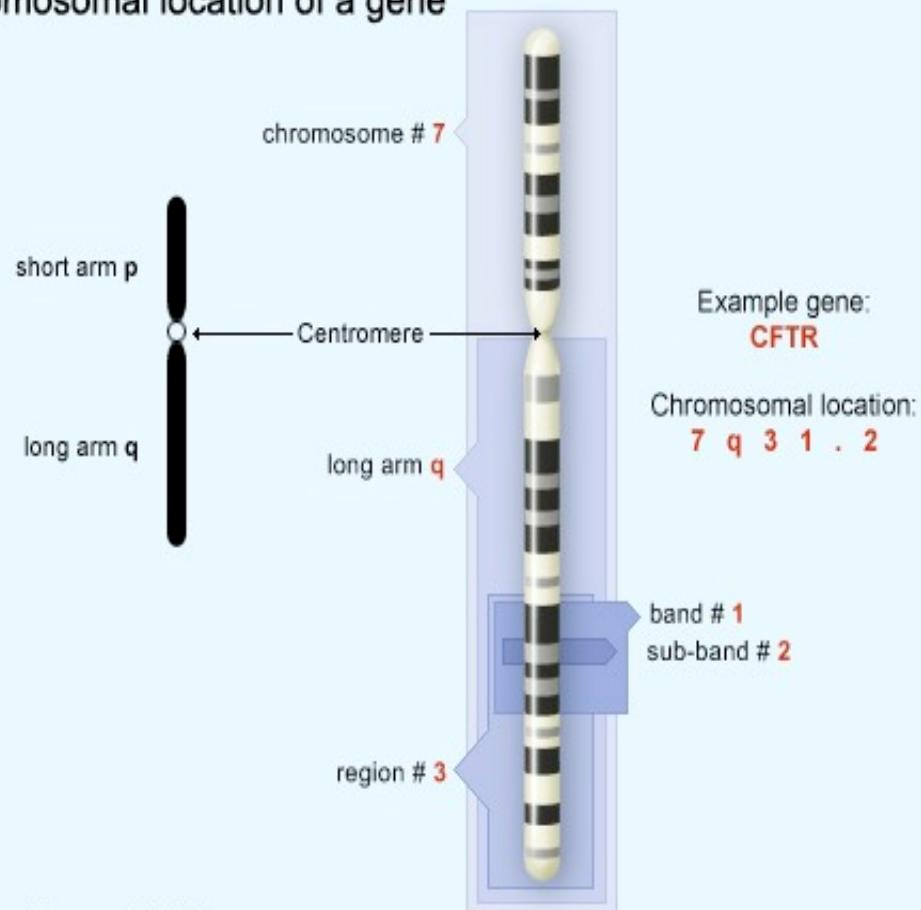
Gene Expression



Genetics of HD

Gene Location in HD

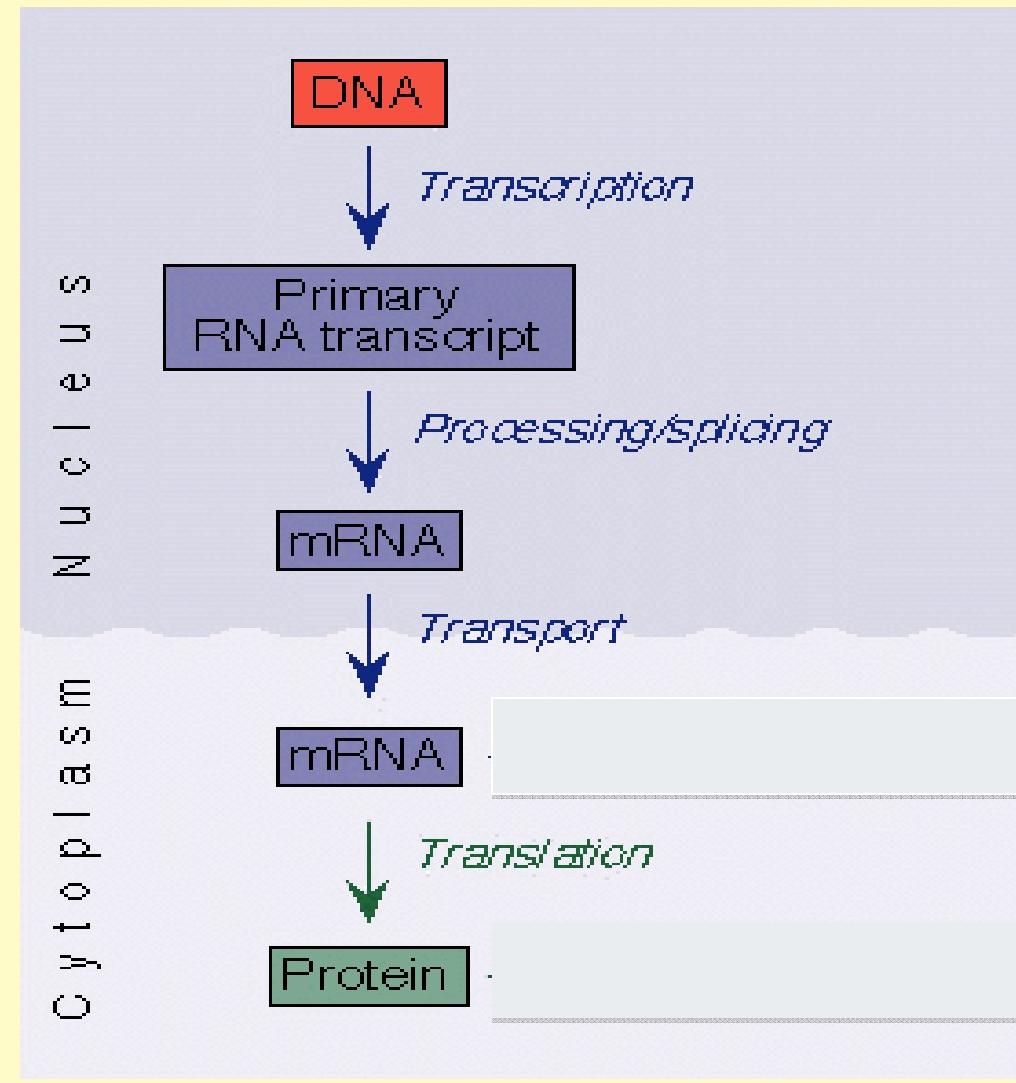
Chromosomal location of a gene



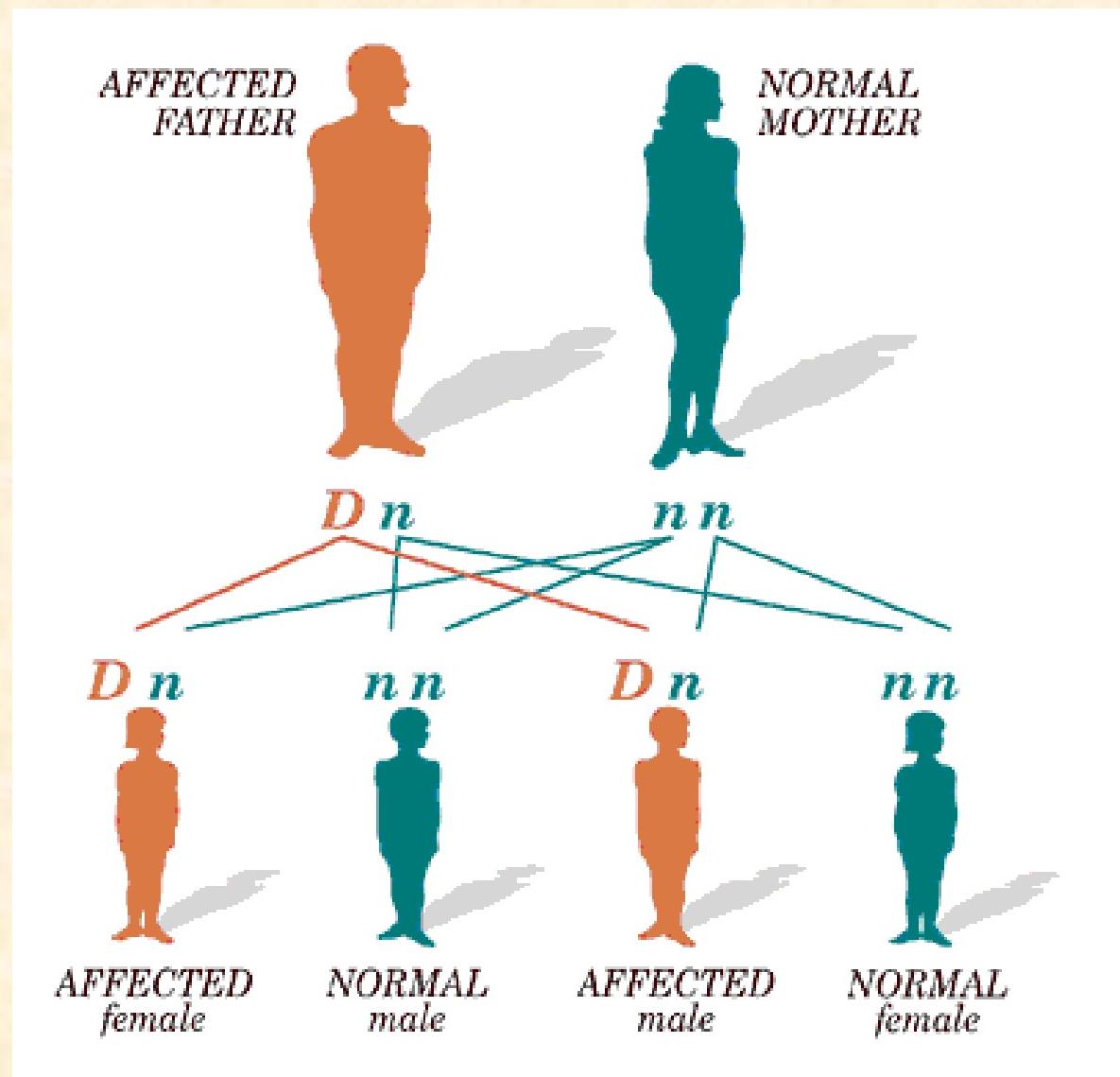
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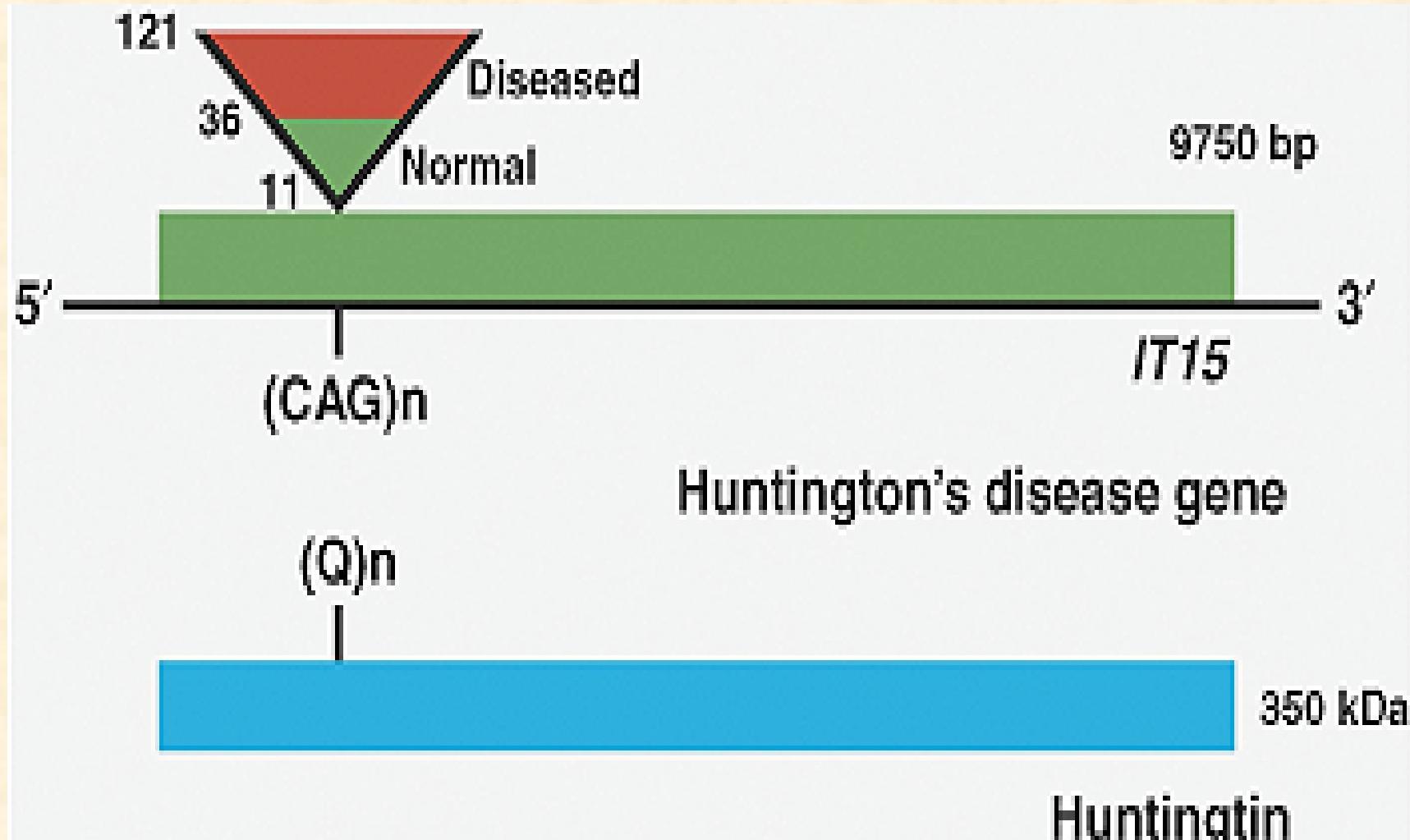
Genes Code for Proteins



HD



The HD Gene



The Molecular Disorder

Huntingtin - Normal

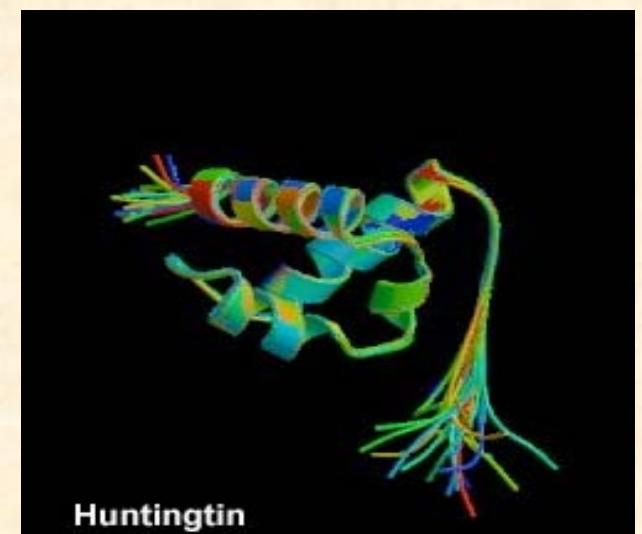


Polyglutamine Repeat Zone



Huntingtin - Mutant

Protein Folding Abnormality



Mutant Protein Accumulation Results in Nerve Cell Degeneration

